

Leadership in Energy and Environmental Design (LEED)

CIP Subcommittee Meeting

November 30, 2017



What is LEED?

Developed by the non-profit US. Green Building council (USGBC) in 1994, it includes a set of rating systems for design, construction, operation and maintenance of green buildings, homes and neighborhoods that aims to help building owners and operators be environmentally responsible and use resource efficiently.

Benefits of LEED

- Reduced energy and water usage
- Reduced maintenance and operation costs
- Reduced construction waste during the building process
- Increased indoor air quality
- Increased employee performance, satisfaction, and retention
- Promotes usage of recycled material
- Attracts companies, employees, and tenants who value sustainability

How does LEED Work?

LEED is simply a point system, or a scorecard.

The more energy efficient and “green” a building is, the more points it will earn. These points are earned through meeting credits in 8 categories:

- 1) Location and Transportation
- 2) Sustainable Sites
- 3) Water Efficiency
- 4) Energy and Atmosphere
- 5) Materials and Resources
- 6) Indoor Environmental Quality
- 7) Innovation and Design Process
- 8) Regional Priority

The more points attained the higher the rating. Rating include Certified, Silver, Gold or Platinum.

LEED v4 Checklist



LEED v4 for BD+C: New Construction and Major Renovation Project Checklist

Project Name:
Date:

Y ? N



Credit Integrative Process 1

0 0 0 Location and Transportation 16

	Credit	LEED for Neighborhood Development Location	16
	Credit	Sensitive Land Protection	1
	Credit	High Priority Site	2
	Credit	Surrounding Density and Diverse Uses	5
	Credit	Access to Quality Transit	5
	Credit	Bicycle Facilities	1
	Credit	Reduced Parking Footprint	1
	Credit	Green Vehicles	1

0 0 0 Sustainable Sites 10

Y	Prereq	Construction Activity Pollution Prevention	Required
	Credit	Site Assessment	1
	Credit	Site Development - Protect or Restore Habitat	2
	Credit	Open Space	1
	Credit	Rainwater Management	3
	Credit	Heat Island Reduction	2
	Credit	Light Pollution Reduction	1

0 0 0 Water Efficiency 11

Y	Prereq	Outdoor Water Use Reduction	Required
Y	Prereq	Indoor Water Use Reduction	Required
Y	Prereq	Building-Level Water Metering	Required
	Credit	Outdoor Water Use Reduction	2
	Credit	Indoor Water Use Reduction	6
	Credit	Cooling Tower Water Use	2
	Credit	Water Metering	1

0 0 0 Energy and Atmosphere 33

Y	Prereq	Fundamental Commissioning and Verification	Required
Y	Prereq	Minimum Energy Performance	Required
Y	Prereq	Building-Level Energy Metering	Required
Y	Prereq	Fundamental Refrigerant Management	Required
	Credit	Enhanced Commissioning	6
	Credit	Optimize Energy Performance	18
	Credit	Advanced Energy Metering	1
	Credit	Demand Response	2
	Credit	Renewable Energy Production	3
	Credit	Enhanced Refrigerant Management	1
	Credit	Green Power and Carbon Offsets	2

0 0 0 Materials and Resources 13

Y	Prereq	Storage and Collection of Recyclables	Required
Y	Prereq	Construction and Demolition Waste Management Planning	Required
	Credit	Building Life-Cycle Impact Reduction	5
	Credit	Building Product Disclosure and Optimization - Environmental Product Declarations	2
	Credit	Building Product Disclosure and Optimization - Sourcing of Raw Materials	2
	Credit	Building Product Disclosure and Optimization - Material Ingredients	2
	Credit	Construction and Demolition Waste Management	2

0 0 0 Indoor Environmental Quality 16

Y	Prereq	Minimum Indoor Air Quality Performance	Required
Y	Prereq	Environmental Tobacco Smoke Control	Required
	Credit	Enhanced Indoor Air Quality Strategies	2
	Credit	Low-Emitting Materials	3
	Credit	Construction Indoor Air Quality Management Plan	1
	Credit	Indoor Air Quality Assessment	2
	Credit	Thermal Comfort	1
	Credit	Interior Lighting	2
	Credit	Daylight	3
	Credit	Quality Views	1
	Credit	Acoustic Performance	1

0 0 0 Innovation 6

	Credit	Innovation	5
	Credit	LEED Accredited Professional	1

0 0 0 Regional Priority 4

	Credit	Regional Priority: Specific Credit	1
	Credit	Regional Priority: Specific Credit	1
	Credit	Regional Priority: Specific Credit	1
	Credit	Regional Priority: Specific Credit	1

0 0 0 TOTALS Possible Points: 110

Certified: 40 to 49 points, Silver: 50 to 59 points, Gold: 60 to 79 points, Platinum: 80 to 110

LEED Criteria Summaries

Location & Transportation — how close is the project to mass transit and does it provide for green transportation. (Bike racks & shower facilities, parking for car pool and alternatively fueled vehicles.)

Sustainable Sites — utilize nearby natural resources and ecosystems that can naturally take part of the design, minimizing environmental pollution.

Water Efficiency — reduce potable water use.

Energy and Atmosphere — improve energy performance and indoor air quality.

Materials and Resources — use locally sourced, sustainable products.

Indoor Environmental Quality — keeping the interior space air clean and fresh.

Innovation and Design Process — any idea not covered under the main LEED areas

Regional Priority — addressing a particular concern based on location.

History in Scottsdale

- 3/22/2005 — Council adopted Resolution No. 6644 Approving Green Building (LEED) Policy for New City Construction and Remodels of LEED Buildings.
 - All new, occupied city buildings, with a payback of at least five years or less, will be designed and built to achieve LEED certification at a Gold Level and should strive for the highest level of certification whenever project resources and conditions permit.

Current COS LEED Building Inventory

No.	City Facility	Cert. Type	Cert. Level or Status	Projected Energy Cost Savings	Solar System		Projected Indoor Water Reduction	Projected Irrigation Water Reduction	Building Completion Date
					PV	Thermal			
1	Granite Reef Senior Center	LEED	Gold	47%	40 kW	No	30%	52%	2007
2	Fire Station 602	LEED	Platinum	43%	4 kW	Yes	30%	100%	2009
3	Arabian Library	LEED	Certified	20%	No	No	30%	0%	2009
4	Appaloosa Library	LEED	Gold	32%	6 kW	No	30%	50%	2010
5	Gateway Access Trailhead	LEED	Platinum	65%	18 kW	No	30%	100%	2010
6	McKellips Police District Station 1	LEED	Silver	12%	No	No	20%	50%	2011
7	McCormick-Stillman Model Railroad Building	LEED	Gold	43%	10 kW	No	36%	53%	2011
8	Fire Station 601	LEED	Platinum	47%	32 kW	Yes	50%	84%	2012
9	Fire Station 608	LEED	Platinum	58%	30 kW	Yes	42%	88%	2012
10	Brown's Ranch Trailhead	IgCC	N/A	100%	9 kW	No	27%	100%	2013
11	Museum of the West	LEED	Gold	49%	No	No	40%	50%	2015
12	Scottsdale Airport Operation Center	LEED	Silver	24%	No	No	38%	NA	2016
13	Fire Station 613	LEED	Ready for bldg. permit	30%	No	No	30%	50%	
14	Fire Station 616	LEED	In design						
15	Fire Station 603	LEED	In planning						
16	Water Campus	NA	In design	10%	2.3 MW	No	NA	NA	
	Totals				2.5 MW				

Cost of LEED

- All buildings LEED since 2006 — no control building to directly compare to.
- Example costs:
 - Architect (design) cost for LEED certification for FS 603:
 - \$10,000 design phase — energy modeling and LEED consulting
 - \$12,000 Construction Phase LEED submittal
 - Independent commissioning agent for FS 613:
 - \$3,900 during the design phase
 - \$8,900 after construction
 - Construction costs range from 5% - 30% add based on industry research. COS does not have a direct cost comparison as all buildings since adoption have been designed to LEED standards.

What we have learned from LEED

- LEED expectations need to be established up front in the design process and understood by the entire team.
- LEED certified facilities have not shown a direct reduction in operations and maintenance costs.
- Some systems designed to achieve LEED points have been removed or abandoned due to non-performance.
- The new LEED rating system v4 raised the bar for certification of buildings.
- Some of the LEED design requirements are beneficial however others are paid for just to achieve LEED points.

Current building project status

For current design and construction projects managed by CPM, the project managers were charged with delivering buildings utilizing lessons learned from the previous LEED buildings, meeting the needs of the Fire Department and including systems that the facilities department prefers due to reliability and serviceability.

The result of this direction are the following certification levels:

- Fire Station 613 — Silver
- Fire Station 603 — Certified
- Fire Station 616 — Silver

Questions?